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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------|-------------|----------------------|---------------------|------------------|
| 10/714,023 | 11/13/2003 | Brian Kearns | 04195/0200158-US0 | 1396 |
| 7278 | 7590 | 08/09/2006 | EXAMINER | |
| DARBY & DARBY P.C. | | | NGUYEN, LEE | |
| P. O. BOX 5257 | | | | |
| NEW YORK, NY 10150-5257 | | | ART UNIT | PAPER NUMBER |
| | | | 2618 | |

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/714,023 | KEARNS, BRIAN | |
| | Examiner | Art Unit | |
| | LEE NGUYEN | 2618 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☒ Claim(s) 13-15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The IDS filed 11/13/2003 has been considered and recorded in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kodim (EP 1,237,222) submitted by Applicant.

Regarding claim 1, Kodim teaches a switching circuit for use at the antenna of a multiband mobile cellular handset (fig. 3a), the circuit comprising an antenna port 22, a TX low band port 32, a TX high band port 30 and at least one RX port 16, the circuit further comprising a single pole, triple throw (SP3T) solid state voltage-controlled switch D1-D4 (fig. 3a) to selectively connect any one of the TX low band port, TX high band port and RX port to the antenna port (see [0037] – [0043]).

Regarding claims 2-3, Kodim also teaches that the SP3T switch comprises a plurality of single pole, single throw (SP1T) solid state switching devices diodes D1-D4, see figure 3a.

Regarding claim 4, Kodim further teaches that the antenna port 22 (see figure 4) is connected to the TX low band port 32 via a first SP1T device D4, to the TX high band port 30 via a second SP1T device D3, and to the RX port 16 via first and second frequency-dependent phase shifting elements connected in series T1-T2, the circuit further including a first tuned circuit C1 connected to the junction of the first and second frequency-dependent phase shifting elements T1-T2 via a third SP1T device D1 and a second tuned circuit C2 connected to the end of the second frequency-dependent phase shifting element T2 via a fourth SP.sub.1T device D2, the first tuned circuit C1 being tuned to resonate substantially at the centre of the TX high band frequency range (see [0052]), the second tuned circuit C2 being tuned to resonate substantially at the centre of the TX low band frequency range (see [0052]), the first frequency-dependent phase shifting element corresponding to a quarter wavelength at frequencies in the TX high band frequency range (see [0038]), and the first and second frequency-dependent impedances in combination corresponding to a quarter wavelength at frequencies in the TX low band frequency range (see [0039]).

Regarding claim 5, Kodim also teaches that the first and second frequency-dependent phase shifting elements are first and second transmission lines respectively (see T1-T2, figs. 3a, 4).

Regarding claim 7, Kodim also teaches that the first diode D4 has its anode connected to the antenna port 22 (figs. 3a, 4) and its cathode connected to the TX low band port 32, wherein the second diode D3 has its anode connected to the antenna port 22 and its cathode connected to the TX high band port 30, wherein the third diode D1 has its anode connected to the junction of the first and second frequency-dependent impedances T1-T2 and its cathode connected to the first tuned circuit C1 (see figures 3a, 4), and wherein the fourth diode D2 has its anode connected to the end of the second frequency-dependent impedance T2 and its cathode connected to the second tuned circuit C2, the circuit inherently further including a first voltage input terminal connected to the anode of the first diode and the cathode of the third diode and a second voltage input terminal connected to the anode of the second diode and the cathode of the fourth diode (see switch on/off in [0038]-[0044]).

Regarding claim 8, Kodim also teaches that the at least one RX port 16 comprises a plurality of different band RX ports 56-62 derived from a common node of the circuit 28 (fig. 3a).

Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Thomsen et al. (US 6,249,687).

Regarding claim 10, Thomsen teaches a circuit for directing an RF input signal, appearing at a common node of said circuit and which may occupy any one of at least three mutually exclusive frequency bands, to a respective circuit output (see figures 1, 3, 6), the circuit including at least three RF bandpass filters 30, 35, 40 (fig. 6) each having a pass band corresponding to a respective one of the frequency bands of the input signal (col. 4, lines 21-43), and an impedance matching circuit 40, 50, 55 connecting said RF filters 30, 35, 40 in parallel to said node 65 and which is designed so that within the pass band of any given RF filter the impedance from said common node along the circuit paths through the other RF filters is high compared to the impedance along the circuit path through the given RF filter (col. 3, lines 28-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim.

Regarding claim 6, Kodim also teaches that the first and second frequency-dependent impedances are the combination of the transmission lines T1-T2 (see [0038] – [0039]).

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He does not explicitly teach that they are made from the first and second LC networks.

It is taken official notice that the art of providing LC network transmission line as impedance is conventionally well known. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide LC impedance to the circuit of Kodim in order simplify circuit implementation.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view of Thomsen et al. (US 6,249,687).

Regarding claim 9, Kodim fails to teach that the different band RX ports are each derived via a respective RF bandpass filter from the common node of the circuit.

Thomsen teaches that different band RX ports 70, 75, 80 are each derived via a respective RF bandpass filter 30, 35, 40 from the common node 65 of the circuit (fig. 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the bandpass filters of Thomsen with the multi-receivers of Kodim in order to prevent channel interference.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomsen et al. in view of Kawachi et al. (US 2002/0039056).

Regarding claims 11-12, Thomsen fails to teach that the RF filters are SAW filters in which the RF filters have a balanced output. Kawachi the conventional RF filters which

are made from balance output SAW filters (see [0134]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the balanced output SAW filters of Kawachi with the circuit of Thomsen in order to improve the suppression of the spurious components outside the pass-band.

Allowable Subject Matter

Claims 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 13, the prior art of record fails to teach that the impedance matching circuit comprises a first sub-circuit connected to said common node and having a low band output and a high band output, and a second sub-circuit connected to the high band output of the first sub-circuit and having first and second outputs for upper and lower bands of the high band output.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEE NGUYEN whose telephone number is 571-272-7854. The examiner can normally be reached on FIRST FRIDAY OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANDERSON D. MATTHEW can be reached on 571-272-4177. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LEE NGUYEN
PRIMARY EXAMINER